Small Business Innovation Research/Small Business Tech Transfer

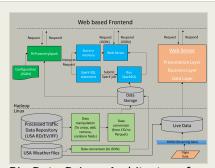
Big Data Driven Architecture for Real Time Systemwide Safety Assurance, Phase II



Completed Technology Project (2016 - 2019)

Project Introduction

Our proposed research work significantly enhances the state-of-the-art in aviation data analytics by providing, for the first time, a one-stop resource for meeting data analysis needs of aviation researchers, analysts and practitioners. The resulting Cloud-based Aviation Big Data Analytics Platform benefits multiple NASA projects: RSSA real-time safety assessment, SMARTNAS test-bed, and the Sherlock ATM data warehouse. Our innovation is researched through achievement of five objectives and associated work efforts. The first objective is the refinement of use cases for the big data application. We draw upon our knowledge gained in Phase I research and continued interactions with aviation stakeholders to narrow the use cases to specific applications that are a challenge to NASA and the broader aviation community related to RSSA, SMARTNAS, and other ATM research efforts. The second objective is to create a Big Data technology-driven architecture and processing capabilities for the more specific use cases developed to meet objective 1. The third objective is to achieve a subcomponent demonstration for each refined use case so that we can measure the benefit of using these techniques to solve ATM analytics challenges. The fourth objective is to tie together the demonstration components developed as part of objective 3, into an overall architecture offering a 'one-stop-shop' for both 'at-rest' and 'inmotion' analytics to meet a variety of research needs. Finally, our fifth objective is to pursue commercialization via outreach to government and industry stakeholders. Most current aviation research focuses on smaller datasets or specific data-types. A massive amount of data thus sits unanalyzed and potentially holds a rich set of undiscovered trends that may be valuable for aviation safety-assurance and NAS efficiency-enhancement. Our SBIR will greatly contribute to the advancement of aviation research by enabling truly big data analytics on this massive, un-tapped data.



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Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Туре	Location
ATAC	Lead Organization	Industry	Santa Clara, California
Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California

Primary U.S. Work Locations

California

Project Transitions

May 2016: Project Start



March 2019: Closed out

Closeout Documentation:

• Final Summary Chart(https://techport.nasa.gov/file/139652)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

ATAC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

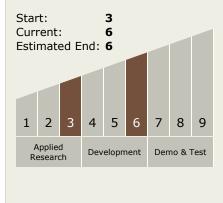
Program Manager:

Carlos Torrez

Principal Investigator:

John E Schade

Technology Maturity (TRL)





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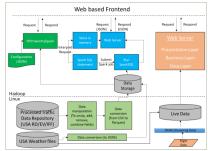
Completed Technology Project (2016 - 2019)

Images



Briefing Chart Image

Big Data Driven Architecture for Real Time Systemwide Safety Assurance Phase II, Phase II (https://techport.nasa.gov/imag e/131491)



Final Summary Chart Image

Big Data Driven Architecture for Real Time Systemwide Safety Assurance, Phase II (https://techport.nasa.gov/imag e/137297)

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing

Analytics Platform

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System

